

**RECEIVED
CENTRAL FAX CENTER****FEB 26 2007****Remarks:**

Applicants appreciatively acknowledge the Examiner's confirmation, in item 3 of the above-named Office Action, of receipt of Applicants' claim for priority and certified priority document under 35 U.S.C. § 119(a)-(d).

Reconsideration of the application, as amended herein, is respectfully requested.

Claims 1, 2 and 4 - 7 are presently pending in the application. Claims 1 and 4 have been amended. Claim 3 was previously canceled.

Applicants gratefully acknowledge that item 7 of the Office Action indicated that claims 2 and 5 - 7 would be allowable if rewritten in independent form including all of the limitation of the base claims and any intervening claims.

In item 4 of the Office Action, claims 1 and 4 were objected to on the basis of an informality. Applicants have amended claims 1 and 4 to address the concerns raised in item 4 of the Office Action.

In item 6 of the Office Action, claims 1 and 4 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U. S. Patent No. 6,509,621 to Nakao ("NAKAO").

Applic. No. 10/642,856
Response Dated February 26, 2007
Responsive to Office Action of November 28, 2006

Applicants respectfully traverse the above rejections.

First, Applicants reiterate and incorporate herein, by reference, the arguments made against the **NAKAO** reference in Applicants' response dated September 19, 2006.

Further, Applicants' claim 1 recites, among other limitations:

. . . the timings of the impression of both the respective word line current and the respective bit line current being exactly controlled so that the conventional switching of the soft magnetic layer of the selected memory cell is transferred into a magnetization rotation process **rotating said magnetization direction of the soft magnetic layer in a plurality of successive steps** in a direction desired for writing a logic "0" or "1". [emphasis added by Applicants]

Similarly, Applicants' independent claim 4 recites, among other limitations:

. . . said write circuit controlling the timings of the impression of both said respective word line current and said respective bit line current exactly causing the conventional switching of the soft magnetic layer of the selected memory cell to be transferred into a magnetization rotation process with only the soft magnetic layer of the respective memory cell **being rotated in a plurality of successive steps in a direction desired for writing a logic "0" or "1"**. [emphasis added by Applicants]

As such, Applicants' claims require, among other limitations, that the magnetization direction of the soft magnetic layer be

Applic. No. 10/642,856
Response Dated February 26, 2007
Responsive to Office Action of November 28, 2006

rotated in a plurality of successive steps. See, for example, Figs. 3A - 3H of the instant application.

However, the **NAKAO** reference neither teaches, nor suggests, among other limitations of Applicants' claims, causing rotation of the magnetization direction of the soft magnetic layer in a plurality of successive steps. More particularly, with regard to the above-described limitation of Applicants' claims, the Office Action states, on page 5 and, again, on page 6:

Note: Application of word line current *lw_x* and bit line current *lw_y* are done in a specified time period of *lns* so that the magnetization direction is switched according to Fig. 9A-9E (see column 9, line 46 - column 10, line 12. Additionally, it is inherent to write either a logic "0" or logic "1" to a memory cell.

However, neither Figs. 9A - 9E of **NAKAO**, nor col. 9 of **NAKAO**, line 46 - col. 10, line 12, teach or suggest, among other limitations of Applicants' claims, causing rotation of the magnetization direction of the soft magnetic layer in a plurality of successive steps.

Instead, **NAKAO** discloses a method shown in Figs. 9A - 9E and described in col. 9 of **NAKAO**, line 39 - col. 10, line 56, which method does not ever rotate the magnetization direction of the soft magnetic layer in a plurality of successive steps.

Applic. No. 10/642,856

Response Dated February 26, 2007

Responsive to Office Action of November 28, 2006

Rather, as represented in Figs. 9B and 9D of **NAKAO**, a write current of 1mA is applied to the word line and bit line simultaneously and, under an externally applied magnetic field of 40 Oe, the magnetization direction of the soft-magnetic layer of **NAKAO** is rotated in the desired direction in a single step.

As such, Applicants believe that claims 1 and 4, and all claims depending therefrom, are patentable over **NAKAO**, because **NAKAO** fails to teach or suggest, among other limitations, rotation of the magnetization direction of the soft-magnetic layer of **NAKAO** in a plurality of successive steps.

Further, Applicants have amended claims 1 and 4 to make it even more clear that the rotation of the magnetization direction of the soft-magnetic layer (i.e., in a plurality of successive steps) results from a magnetic field produced by the superposition of only a magnetic field of the respective word line current and a magnetic field of the respective bit line current. For example, Applicants have amended claim 1 to recite, among other limitations:

. . . in each selected memory cell selected by the respective word line and the respective bit line, a magnetic field leads to a change of a magnetization direction of only the soft-magnetic layer, the write currents being impressed on the respective word line and the respective bit line causing a magnetic field produced by the superposition of only a magnetic field

Applic. No. 10/642,856

Response Dated February 26, 2007

Responsive to Office Action of November 28, 2006

of the respective word line current and a magnetic field of the respective bit line current to be precisely large enough to suffice for switching the magnetization of the soft magnetic layer in the selected memory cell but small enough that neither adjacent cells nor non-selected memory cells situated on selected lines are switched, . . . [emphasis added by Applicants]

Applicants' claim 4 has been amended to recite a similar limitation, among others. These amendments to claims 1 and 4 are supported by the specification of the instant application, for example, by the specification of the instant application, for example, page 1 of the instant application, line 25 - page 2, line 2, which states:

The magnetic fields required for this purpose are generated by currents and which respectively flow through the word line and the bit line and are superposed at the crossover point thereof.

The amendments to claims 1 and 4 are additionally supported, for example, by Figs. 3 and 4 of the instant application. More particularly, page 11 of the instant application, lines 10 - 14, state:

Consequently, in accordance with Figs. 2B and 2C, a **magnetic field with a component H_x and H_y is generated by the current I_{w1} flowing in the word line WL and the current I_{BL} flowing in the bit line BL (broken arrow in Fig. 2B).** [emphasis added by Applicants]

Figs. 3 and 4 of the instant application **correlate the effect of the magnetic field (i.e., having components H_x and H_y) produced only by the current I_{w1} flowing in the word line WL**

Applic. No. 10/642,856

Response Dated February 26, 2007

Responsive to Office Action of November 28, 2006

and the current I_{BL} flowing in the bit line BL, to the rotation of the magnetization direction of the soft-magnetic layer.

Figs. 3 and 4 of the instant application are being reproduced herebelow, for convenience.

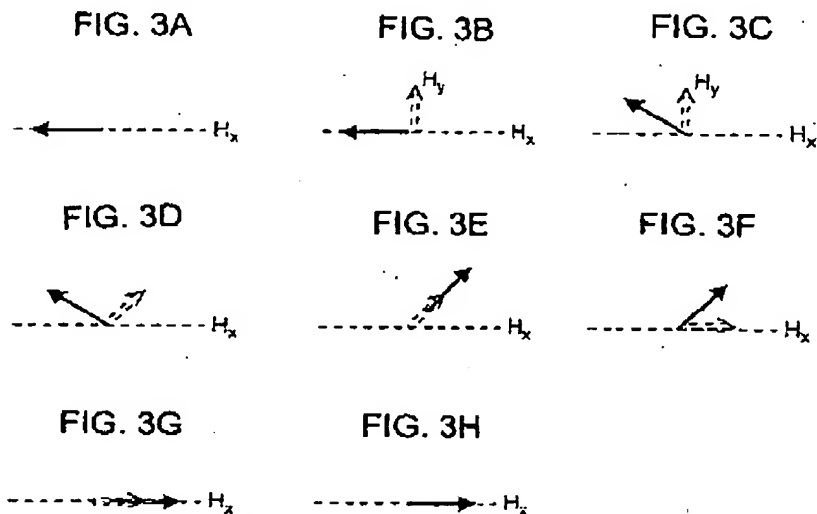
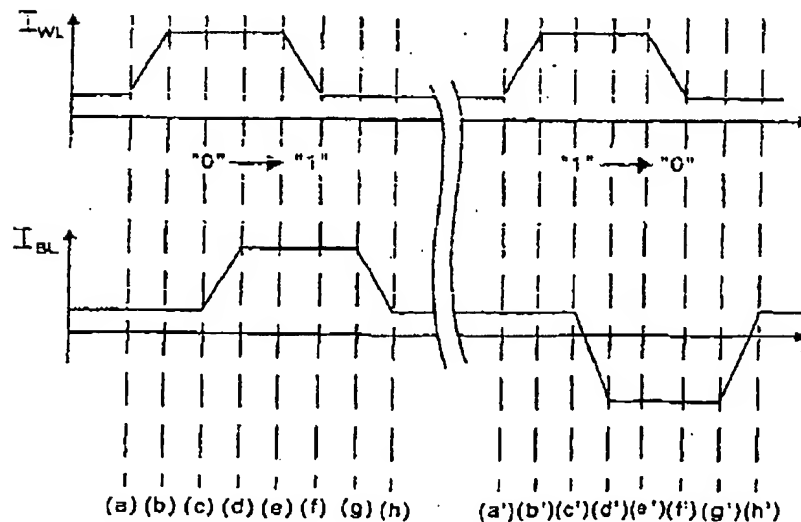


FIG. 4



Applic. No. 10/642,856

Response Dated February 26, 2007

Responsive to Office Action of November 28, 2006

However, contrary to Applicants' claimed invention, **NAKAO** neither teaches, nor suggests, among other limitations of Applicants' claims, that the rotation of the magnetization direction of the soft-magnetic layer results from a magnetic field produced by the superposition of only a magnetic field of the respective word line current and a magnetic field of the respective bit line current. In fact, **NAKAO** specifically teaches away from this limitation of Applicants' claims

As stated above, **NAKAO**, a write current of 1mA is applied to the word line and bit line simultaneously and, under an externally applied magnetic field of 40 Oe, the magnetization direction of the soft-magnetic layer of **NAKAO** is rotated in the desired direction in a single step. This can be seen, more particularly, in connection with Figs. 9A - 9E of **NAKAO**, as well as in col. 9 of **NAKAO**, lines 39 - 45, which state:

Hereinafter, this decrease of the electric current, and hence electric power, will be explained in more detail with reference to FIGS. 9A-9E, showing the result of simulation for the case in which an offset magnetic field H_{offset} of 40 Oe is applied while causing to flow a word line current I_{wx} and a bit line current I_{wy} of 1 mA in the word line pattern 22 and the bit line pattern 26, respectively. [emphasis added by Applicants]

See also, col. 9 of **NAKAO**, lines 46 - 50.

Applic. No. 10/642,856
Response Dated February 26, 2007
Responsive to Office Action of November 28, 2006

As such, **NAKAO** requires an externally applied offset magnetic field of 40 Oe, in addition to the magnetic field resulting from application of the word line current and the bit line current, in order to change the magnetization direction of the soft-magnetic layer of **NAKAO**. This teaching of **NAKAO** directly teaches away from Applicants' currently claimed invention, which requires among other limitations, that the rotation of the magnetization direction results from only the magnetic fields resulting from the application of the word line current and the bit line current.

In view of the foregoing, Applicants' claims are believed to be patentable over **NAKAO**.

It is accordingly believed that none of the references, whether taken alone or in any combination, teach or suggest the features of claims 1 and 4. Claims 1 and 4 are, therefore, believed to be patentable over the art. The dependent claims are believed to be patentable as well because they all are ultimately dependent on claims 1 or 4.

Finally, Applicants appreciatively acknowledge the Examiner's statement that claims 2 and 5 - 7 "would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims." In light of

Applic. No. 10/642,856
Response Dated February 26, 2007
Responsive to Office Action of November 28, 2006

the above, Applicants respectfully believe that rewriting of claims 2 and 5 - 7 is unnecessary at this time.

In view of the foregoing, reconsideration and allowance of claims 1, 2 and 4 - 7 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out.

The instant Amendment is being filed simultaneously with a Request for Continued Examination and its associated fee. If an extension of time for this paper is required, petition for extension is herewith made.

Please charge any additional fees that might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner Greenberg Stemer LLP, No. 12-1099.

Applic. No. 10/642,856
Response Dated February 26, 2007
Responsive to Office Action of November 28, 2006

Respectfully submitted,



For Applicants

Kerry P. Sisselman
Reg. No. 37,237

February 26, 2007

Lerner Greenberg Stemmer LLP
Post Office Box 2480
Hollywood, FL 33022-2480
Tel: (954) 925-1100
Fax: (954) 925-1101